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Application No.: 10/518,272

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. -3. (Canceled).

4. (Currently Amended) A receiver as in claim 12, wherein the analog-to-digital converter samples the received signal in a plurality of the sub-bands at a common sample rate.

5. (Currently Amended) A receiver as in claim 12, wherein the analog-to-digital converter samples the received signal in a first sub-set of the sub-bands at a first sample rate and samples the received signal in a second sub-set of the sub-bands at a second sample rate, wherein the received signal in adjacent sub-bands is sampled at unequal sample rates.

6. (Previously Presented) A receiver as in claim 4, wherein the plurality of sub-bands having a common sample rate have a common bandwidth.

7. (Currently Amended) A receiver as in claim 12, wherein the analog-to-digital converter digitizes a plurality of sub-bands sequentially.

8. (Previously Presented) A receiver as in claim 7, wherein the transformer transforms the digitized signal in a plurality of the sub-bands sequentially.

9. (Currently Amended) A receiver as in claim 12, wherein the reconstructor selects a replica spectrum of a sub-band signal and a re-inverter for re-inverting the replica spectrum if the replica spectrum is inverted.

10. (Currently Amended) A signal receiver comprising: as in claim 1,
a processor configured to extract information content of a digitized received
signal, wherein the processor multiplies the reconstructed received signal by a reference signal in the frequency domain at non-uniformly spaced frequencies[[.]]; and

a digitizer configured to digitize the received signal, wherein the digitizer
comprises:

a filter configured to divide the digitized received signal into a

plurality of frequency sub-bands;

an analog-to-digital converter configured to digitize the signal in each sub-band;

a transformer configured to transform the digitized received signal in each sub-band into the frequency domain; and

a reconstructor configured to concatenate in the frequency domain the digitized received signal in each sub-band thereby reconstructing the spectrum of the digitized received signal, wherein the reconstructor reconstructs the spectrum of the digitized received signal at a frequency lower than the frequency of the spectrum of the digitized received signal prior to being divided into sub-bands.

11. (Currently Amended) A receiver as in claim 12, comprising a down-convertor for down-converting the received signal from a transmission frequency to a lower frequency prior to the digitization by the digitizer of the received signal.

12. (Currently Amended) A signal receiver comprising:

a processor configured to extract information content of a digitized

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received signal; and

a digitizer configured to digitize ~~a~~ the received signal, wherein the digitizer comprises:

a filter configured to divide the digitized received signal into a plurality of frequency sub-bands;

a transformer configured to transform the digitized received signal in each sub-band into a frequency domain;

a reconstructor configured to concatenate in the frequency domain the digitized received signal in each sub-band thereby reconstructing a spectrum of the digitized received signal; and

an analog-to-digital converter configured to digitize the signal in each sub-band, wherein the analog-to-digital converter comprises:

a sampler configured to sample the digitized received signal in the i^{th} sub-band at a sample rate f_{xi} , in a range:

$$\frac{2f_{u_i}}{r_i} \leq f_{x_i} \leq \frac{2f_{l_i}}{r_i - 1},$$

where f_{u_i} is an upper frequency limit of the sub-band and f_{l_i} is a lower frequency limit of the i th sub-band, and r_i is an integer satisfying the inequality

$$1 \leq r_i \leq \text{int} \left\{ \frac{f_{u_i}}{f_{u_i} - f_{l_i}} \right\}.$$

13. (New) A receiver as in claim 10, wherein the analog-to-digital converter samples the received signal in a plurality of the sub-bands at a common sample rate.

14. (New) A receiver as in claim 10, wherein the analog-to-digital converter samples the received signal in a first sub-set of the sub-bands at a first sample rate and samples the received signal in a second sub-set of the sub-bands at a second sample rate, wherein the received signal in adjacent sub-bands is sampled at unequal sample rates.

15. (New) A receiver as in claim 13, wherein the plurality of sub-bands having a common sample rate have a common bandwidth.

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16. (New) A receiver as in claim 10, wherein the analog-to-digital converter digitizes a plurality of sub-bands sequentially.

17. (New) A receiver as in claim 16, wherein the transformer transforms the digitized signal in a plurality of the sub-bands sequentially.

18. (New) A receiver as in claim 10, wherein the reconstructor selects a replica spectrum of a sub-band signal and a re-inverter for re-inverting the replica spectrum if the replica spectrum is inverted.

19. (New) A receiver as in claim 10, comprising a down-convertor for down-converting the received signal from a transmission frequency to a lower frequency prior to the digitization by the digitizer of the received signal.